CWDM 1-8-MkII

CWDM 9-16-MkII

8 channel *CWDM* multiplexers/de-multiplexers

Single mode

User manual

Rev. 0

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Revision history

Current revision of this document is the uppermost in the table below.

Rev.	Repl.	Date	Sign	Change description
0	-	2012-05-23	MR	Initial version

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1 Product overview

CWDM1-8 and CWDM9-16 can be used to transport up to 16 signals on one single mode fiber. The CWDM filter is bitrate and format transparent, meaning SDI, Ethernet and SDH/SONET can run independently on separate wavelengths. The Flashlink CWDM (Coarse Wavelength Division Multiplexing) system is based on all-optical modules for multiplexing and de-multiplexing 8 CWDM wavelengths according to ITU-T G.694.2. The CWDM filter come in two different version, one from 1471 to 1611nm (1-8) and one from 1271 to 1411nm (9-16) with an upgrade port. The upgrade port can transport 16 optical signals over one single mode fiber. The units are passive and all-optical devices, requiring no power supply or control. Any number of channels can be used to transport signals in one direction with the rest of the channels transporting signals in the other direction.

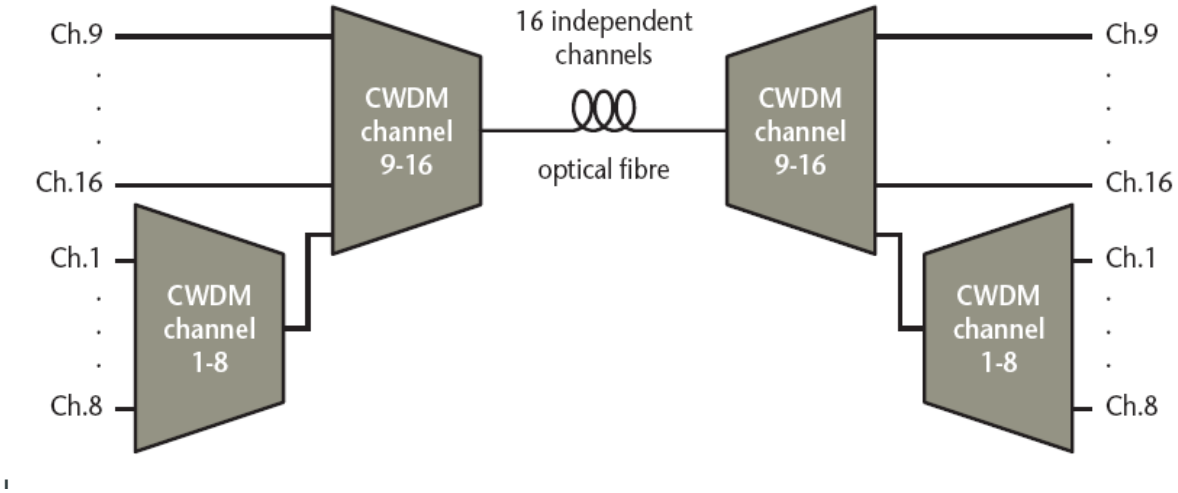

Figure 1 CWDM-1-8/9-16 block diagram

2 Specifications

2.1 Optical specifications

Number of channels	8+8
Available wavelengths	
Ch. 1-8:	1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611nm
Ch. 9-16:	1271, 1291, 1311, 1331, 1351, 1371, 1391, 1411nm
Connector	SC/PC (Please be aware that SC/UPC is not an official standard though it is often used to specify better return loss parameters than SC/PC)
Insertion loss	
end to end 8 channel system	3.5dB max
end to end 16 channel system	3.5dB max for channel 9 to 16 5.5dB max for channel 1 to 8
Insertion loss (common to upgrade)	1dB max
Channel Spacing	20nm
Passband	13nm min
Transmission circuit fiber	9/125um single mode
Adjacent Channel Isolation	30dB min
Non-Adjacent Channel Isolation	40dB min
Ripple	0.3dB max
Directivity	50dB min
Connector Return loss	45dB min
PDL	0.15dB max
Operating Temperature	-10 – 70 oC
Storage Temperature	-40 – 85 oC
Optical Power	500mW max

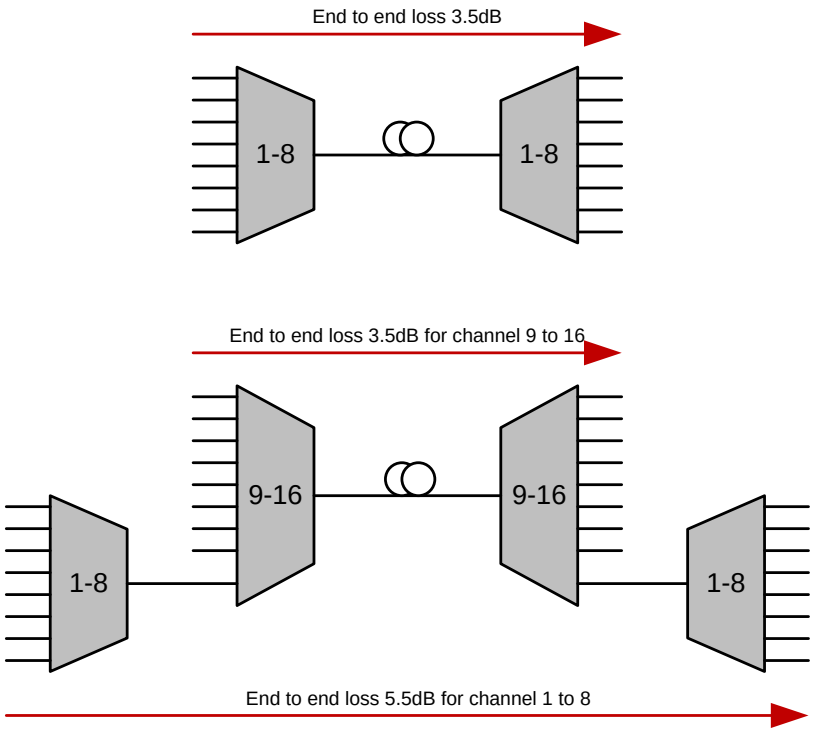

Figure 2 Insertion loss

3 Mounting the CWDM module into frame

The CWDM filter must be mounted in a Flashlink sub rack. This is done from the rear. Do not use force when inserting the CWDM filter. The module's main board has a special design to utilize both card rails in the FL sub rack. In order to enter the lower rail before sliding the unit into its final position, please follow the method shown in the pictures below.

(Please note that the pictures show a not relevant product with identical mechanical solution).

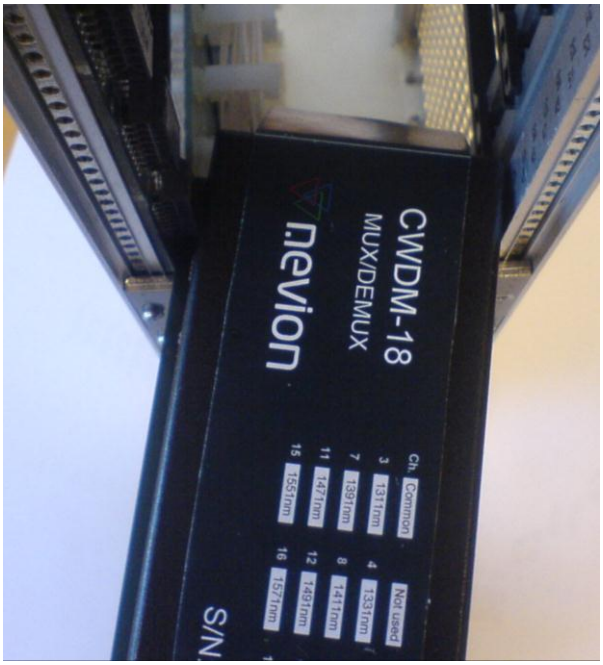

Figure 3 Enter the module with angle

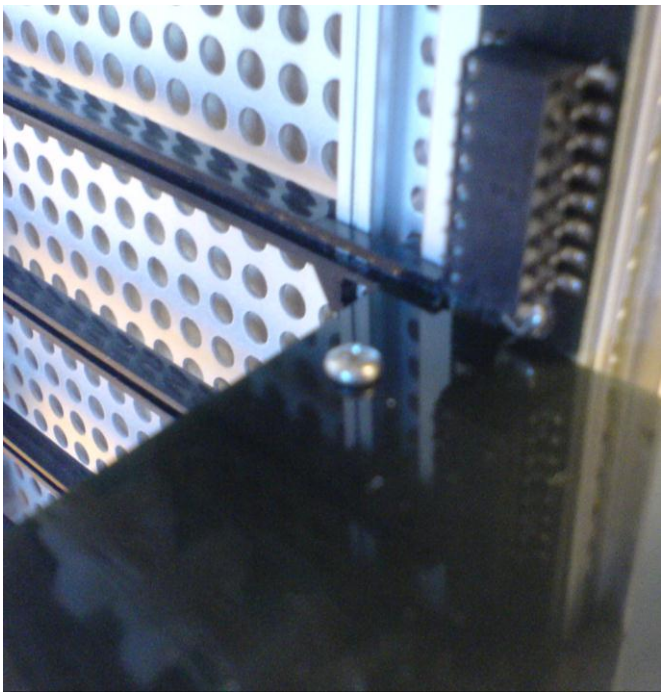

Figure 4 PCB tag inside the power bus PCB

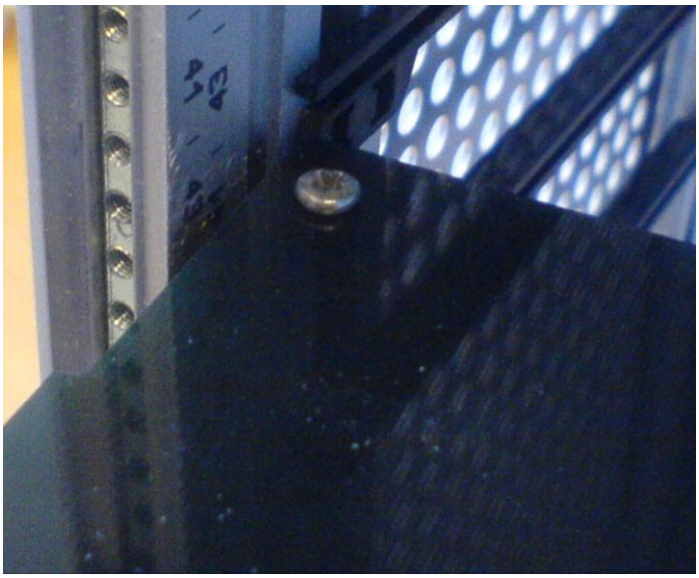

Figure 5 Opposite side of PCB tag

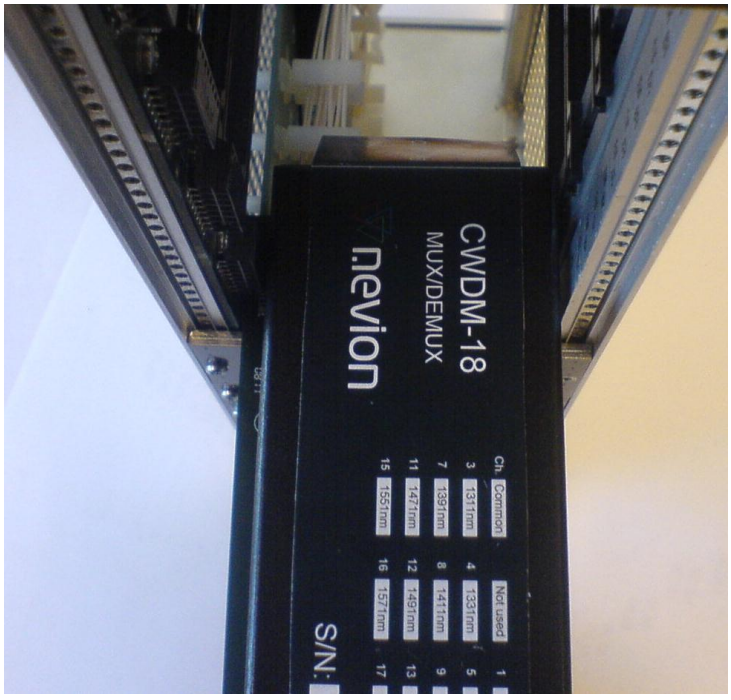

Figure 6 Adjust to normal position

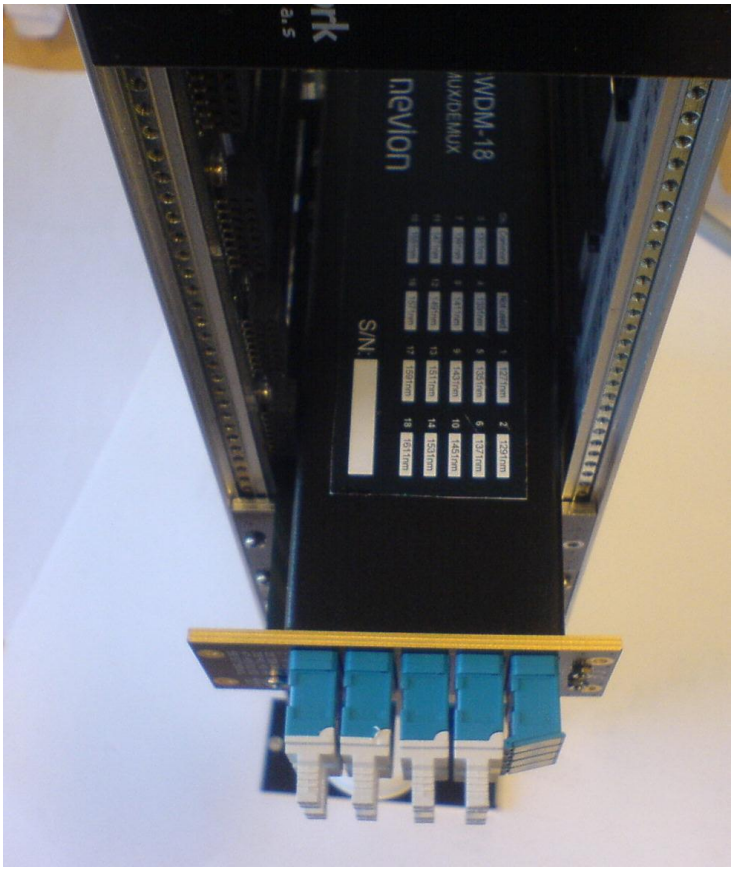

Figure 7 Slide the module to final position using both card rails

Figure 8 Module mounted in frame

4 Connections

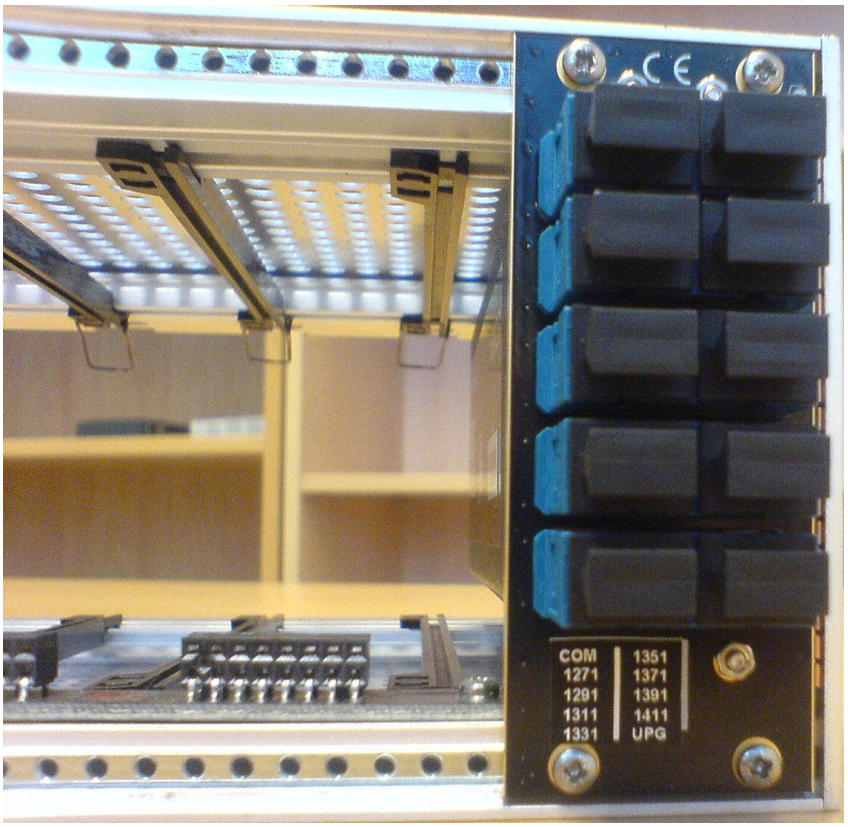

Figure 9 CWDM-9-16 mounted in a Flashlink subrack

4.1 1-8 channel system

Connect each of the optical ports to the corresponding optical port on the receiver or transmitter that matches the signal type and wavelength.

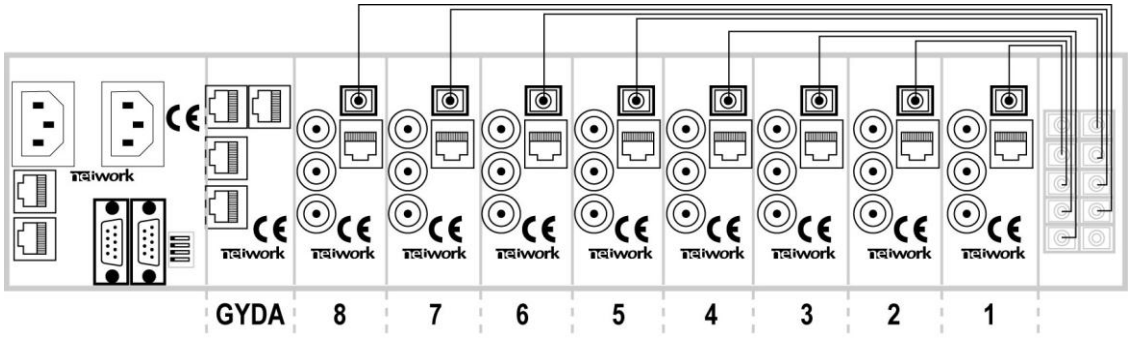

Figure 10 - Interconnection of an 8 channel system.

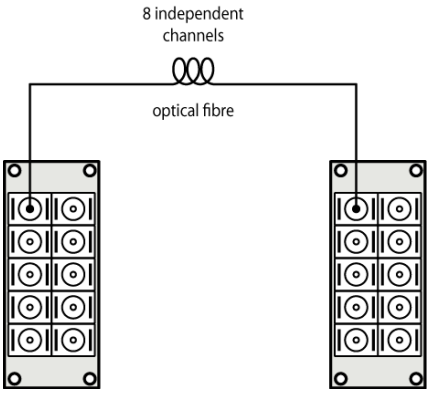

Figure 11 8-channel CWDM filter connected to main fiber

4.2 1-8 channel system

Using the upgrade port of the CWDM-9-16 enables to have up to 16 wavelengths on a single fiber.

Each set of 8 channels must first be connected like described in chapter 4.1, figure 3.

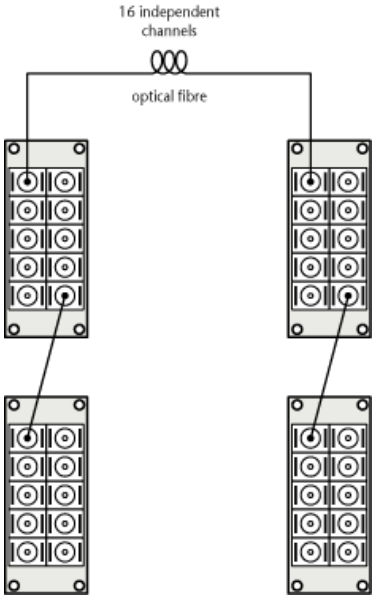

Figure 12 16-channel CWDM filters connected to main fiber

5 Laser safety precautions

These are guidelines to limit hazards from laser exposure.

All the available EO units in the Flashlink range include a laser.

Therefore this note on laser safety should be read thoroughly even though there is no laser onboard this product.

The lasers emit light at wave lengths between 1271 nm and 1611 nm. This means that the human eye cannot see the beam, and the blink reflex cannot protect the eye. (The human eye can see light between 400 nm to 700 nm).

A laser beam can be harmful to the human eye (depending on laser power and exposure time). Therefore:

Be careful when connecting / disconnecting fiber pigtails (ends).
Never look directly into the pigtail of the laser/fiber.
Never use microscopes, magnifying glasses or eye loupes to look into a fiber end.
Use laser safety goggles blocking light between 1271 nm and at 1611 nm

Instruments exist to verify light output power: Power meters, IR-cards etc.

Flashlink features:

The FR-2RU-10-2 is classified as Class 1 laser product according to EN 60 825-1:94/A11:96, and CFR Ch1 (1997) Part 1040.10.

If the front panel is removed, the FR-2RU-10-2 is classified as Class 1 laser product according to EN 60 825-1:94/A11:96, and class IIIb according to CFR Ch1 (1997) Part 1040.10.

Maximum output power[1]: 17 mW

Operating wavelengths: > 1260 nm

[1] Max power is for safety analysis only and does not represent device performance.

General environmental requirements for Nevion equipment

1. The equipment will meet the guaranteed performance specification under the following environmental conditions:
   - Operating room temperature range: 0°C to 50°C
   - Operating relative humidity range: <90% (non-condensing)

2. The equipment will operate without damage under the following environmental conditions:
   - Temperature range: -10°C to 60°C
   - Relative humidity range: <95% (non-condensing)

Product Warranty

The warranty terms and conditions for the product(s) covered by this manual follow the General Sales Conditions by Nevion, which are available on the company web site:

www.nevion.com

Appendix A Materials declaration and recycling information

A.1 Materials declaration

For product sold into China after 1st March 2007, we comply with the “Administrative Measure on the Control of Pollution by Electronic Information Products”. In the first stage of this legislation, content of six hazardous materials has to be declared. The table below shows the required information.

組成名稱 Part Name	Toxic or hazardous substances and elements					
	鉛 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr(VI))	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
CWDM 1-8-MkII CWDM 9-16-MkII	O	O	O	O	O	O
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006. X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.						

This is indicated by the product marking:

A.2 Recycling information

Nevion provides assistance to customers and recyclers through our web site http://www.nevion.com/. Please contact Nevion’s Customer Support for assistance with recycling if this site does not show the information you require.

Where it is not possible to return the product to Nevion or its agents for recycling, the following general information may be of assistance:

- Before attempting disassembly, ensure the product is completely disconnected from power and signal connections.
- All major parts are marked or labeled to show their material content.
- Depending on the date of manufacture, this product may contain lead in solder.
- Some circuit boards may contain battery-backed memory devices.

EC Declaration of Conformity

MANUFACTURER	Nevion	
AUTHORIZED REPRESENTATIVE (Established within the EEA)	Not applicable	
MODEL NUMBER(S)	CWDM 1-8-MkII, CWDM 9-16-MkII	
DESCRIPTION	8 channel CWDM mux/demux	
DIRECTIVES this equipment complies with	Low voltage (EU Directive 2006/95/EC) EMC (EU Directive 2004/108/EC) RoHS (EU Directive 2002/95/EC) China RoHS[2] WEEE (EU Directive 2002/96/EC) REACH	
HARMONISED STANDARDS applied in order to verify compliance with Directive(s)	EN 55103-1:1996 EN 55103-2:1996 EN 60950-1:2006	
TEST REPORTS ISSUED BY	**Notified/Competent Body**	**Report no:**
	-	-
TECHNICAL CONSTRUCTION FILE NO	Not applicable	
YEAR WHICH THE CE-MARK WAS AFFIXED	2011	
TEST AUTHORIZED SIGNATORY		
MANUFACTURER	**AUTHORIZED REPRESENTATIVE (Established within EEA)**	**Date of Issue**
		2011-03-30
		Place of Issue
	Not applicable	Sandefjord, Norway
Name Thomas Øhrbom		
Position VP of Business Support Systems, Nevion (authorized signature)		

[2] Administration on the Control of Pollution Caused by Electronic Information Products

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